

S.N. 10/692,774

REMARKS

Claims 1-20 are pending in this application.

Claims 1-6 are withdrawn from consideration.

Claims 7-20 are rejected.

The office action dated June 14, 2005 indicates that claims 7, 10-12 and 15-20 are rejected under 35 USC §102(e) as being anticipated by Kim U.S. Patent No. 6,806,096. The office action also indicates that claims 8-9 and 13-14 are rejected under 35 USC §103(a) as being unpatentable over Kim in view of Zhu U.S. Patent No. 5,838,608. These rejections have been rendered moot by the amendments above to claims 7 and 12.

Amended claim 7 recites a magnetic tunnel junction device comprising a discrete magnetic tunnel junction stack; and an etch stop layer of a first electrically conductive material. The etch stop layer is in contact with the stack. The device further comprises a dual-damascene conductor including a first portion spaced apart from the etch stop layer and a second portion extending from the first portion to the etch stop layer. The second portion is self-aligned with the etch stop layer.

Kim discloses a method of fabricating a magnetic random access memory device. Figure 16 of Kim shows a device including a bottom conductor 114, an MTJ 116/124 on the bottom conductor, a hard mask 126 on the MTJ 116/124, and a top conductor 158 on the hard mask 126. The hard mask 126 is made of a conductive material such as TiN, Ta, or TaN (column 5, line 66 to column 6, line 6).

Figure 16 of Kim further shows a conductive line 158 on the hard mask 126. Neither Kim nor Zhu teach or suggest a conductor that is (a) between the hard mask 126 and the conductive line 158, and (b) self-aligned with the hard mask 126. Therefore, amended claim 7 and its dependent claims 8-11 should be allowed over the combination of Kim and Zhu.

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Claims 9-11 have been amended for clarity.

Claim 12 recites a magnetic tunnel junction device, comprising a discrete magnetic tunnel junction stack including a plurality of thin film layers that include a data layer, a reference layer, and a tunnel barrier layer positioned between the data layer and the reference layer; and an etch stop layer of a first electrically conductive material. The etch stop layer is in contact with a top portion of the stack. The device further comprises a bottom conductor in electrical communication with a bottom portion of the stack; a dielectric surrounding side portions of the stack and the etch stop layer; a self-aligning via extending through the dielectric, between the etch stop layer and an upper surface of the dielectric; and a dual-damascene conductor. The dual-damascene conductor includes a top conductor on the dielectric and a via conductor in the via. The via conductor is in contact with the etch stop layer. The top conductor and the via conductor are unitary.

Neither Kim nor Zhu teach or suggest the self-aligning via, let alone a via that is unitary with a top conductor (the office action cites a passage at col. 8, lines 47-51, but the passage describes two separate conductors 158 and 160). Therefore, amended claim 12 and its dependent claims 13-20 should be allowed over the combination of Kim and Zhu.

The examiner is respectfully requested to withdraw the claim rejections. If any issues remain, the examiner is encouraged to contact applicants' attorney Hugh Gortler.